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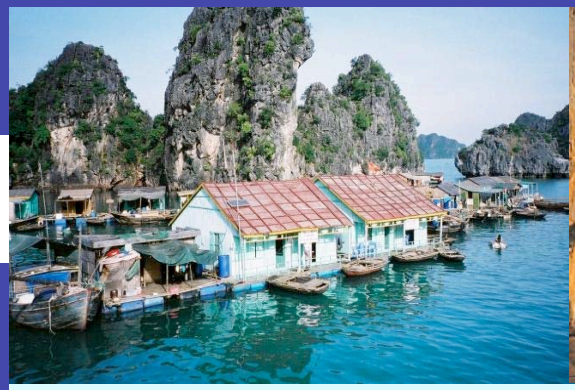
MPA Management Capacity Building Training



Module 1:

LEADERSHIP TRAINING - KNOWLEDGE DEVELOPMENT



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Introductions & Overview

Overview of the Management Capacity Training Course

- Purposes & framework of this course
- What are our goals?
- What do we know already, and what do we want to learn?

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Coastal & Marine Habitats

- Why do different habitats occur in different places?
- Variables that affect biotic composition
- Define: community, habitat, ecosystem
- Overview of marine habitats

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Coastal Communities

- Three zones:
  - land
  - littoral or coastal
  - sub-littoral
- Factors influencing which coastal community will develop

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Interconnectivity of Habitats

Habitats & communities all affect each other

- Movement of water
  - Land to sea (terrestrial influence)
  - Open ocean to land (oceanic influence)
- Movement of organisms and materials between them
- And many more…

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Specific Coastal Habitats: Estuaries & Lagoons

- Shallow, semi-enclosed
- Brackish; variable salinity
- Often have mudflats
- Nursery areas for many fish species
- Many crustaceans and mollusks

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Specific Coastal Habitats: Mangrove Forests

- Leaf fall adds nutrients to water
- Supports many food chains (to other habitats)
- Nursery areas for many fish
- Mollusks, crustaceans (esp. shrimps, crabs)
- Can filter wastes (e.g. from aquaculture)
- Protects coasts from storm surges

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Specific Coastal Habitats: Coral Reef Systems

- Highest fish yields of any habitat (up to 20 tons/km^2/year)
- Extremely high species diversity
  - 1000's of fish species
  - diverse crustaceans & mollusks, sea cucumbers, sea urchins, seaweeds
  - non-food trades: snail shells, corals, sponges
  - many large animals fish, sea turtles & marine mammals feed at reefs

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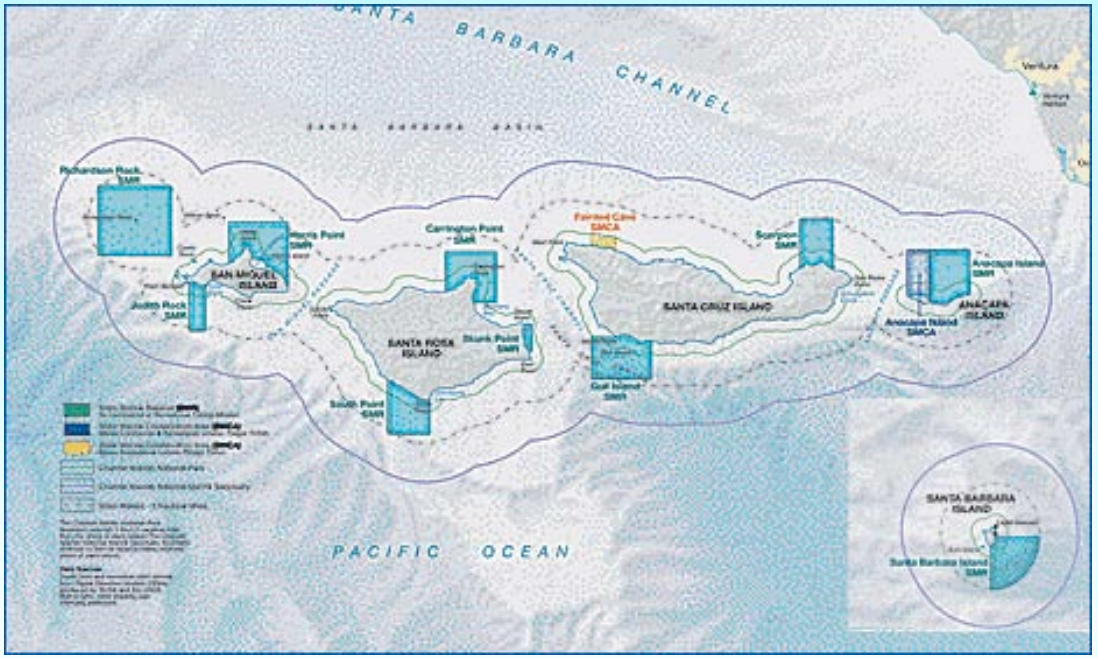
Example: Channel Islands



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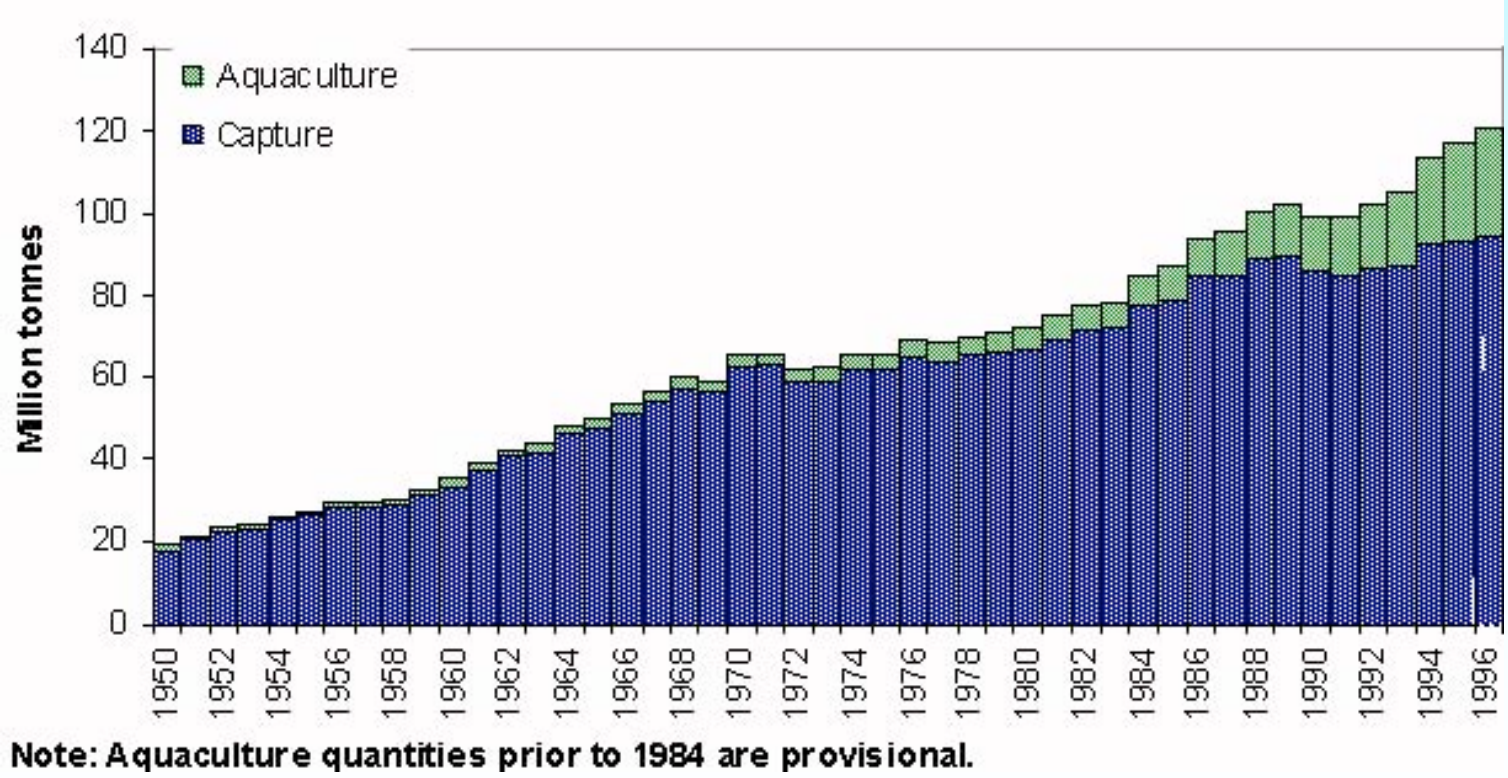
Uses of the Marine Environment

FOOD - finfish, shellfish, mariculture



(FAO 1996)

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Uses: Biomedical Research

- 32 of the 33 animal phyla include marine species
- 15 are exclusively marine
- High diversity of basic cellular biology
- Many marine species use *chemical attacks/defenses*; therefore, rich *biomedical* potential for anti-viral agents, anti-tumor agents, many other drugs.
- Many species have *unusual characteristics* useful for *biology research* (e.g. giant nerves of squids used for nerve research; sea urchin embryos for embryology; etc.)

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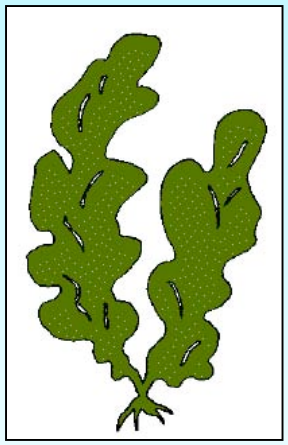
Uses: Raw Materials

- Seaweeds
- Fertilizer
- Animal feed
- Coraline materials
- Sand
- Chitin



Coraline Rock *(www.gulf-view.com)*

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Uses: Services

- Coastal protection
- Transportation
- Stabilization of global climate
- Recreation / amenity
- Waste treatment & disposal

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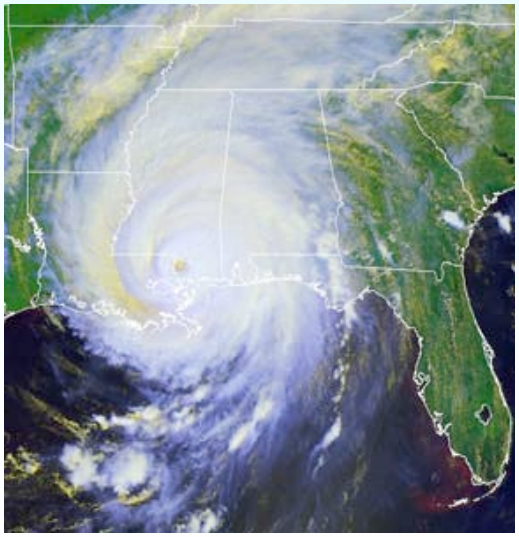
Threats to the Marine Environment

Environmental events

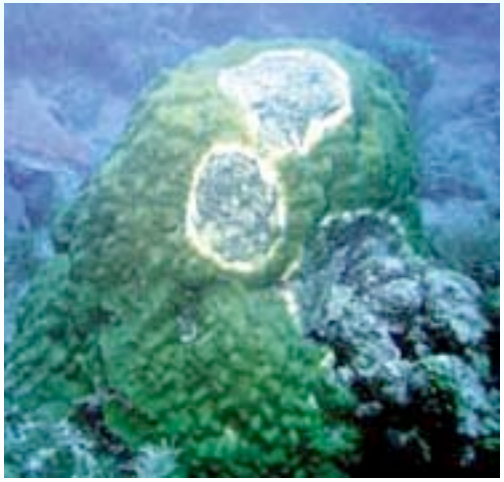
- High temperature
- Flood events
- Storms
- Sea level rise
- Diseases

2004 Tsunami in Thailand:

Hurricane Katrina - 2005



Yellow-band disease on coral:



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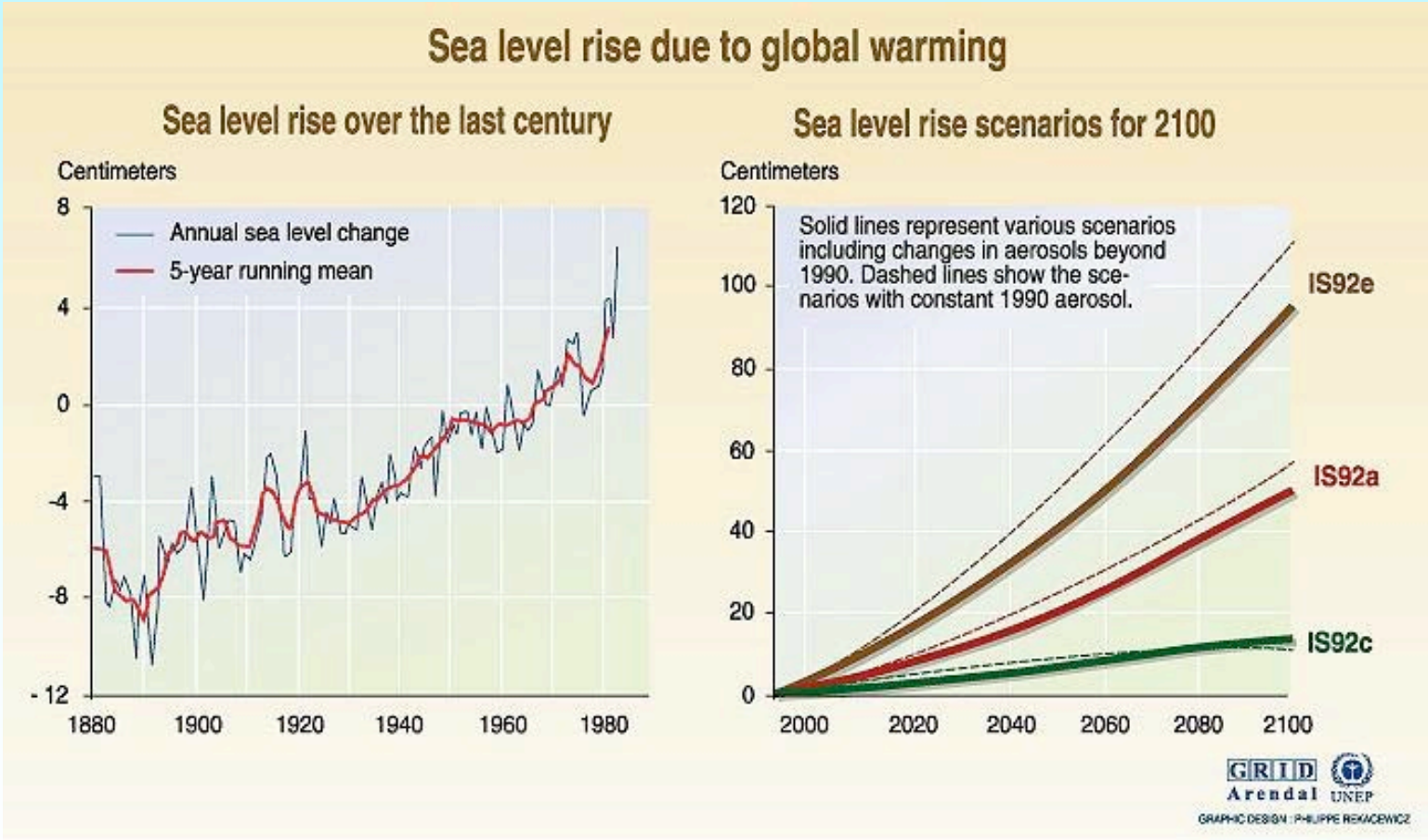
Projected Sea Level Rise



Source: Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge university press, 1996; Sea level rise over the last century, adapted from Gornitz and Lebedeff, 1987.

UNEP-GRID - http://www.grida.no/climate/vital/19.htm

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Threats: Overexploitation

- Bycatch
- Habitat destruction
- Single-species management
- Spawning/recruiting areas not protected

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Threats: Coastal Development

- Harbor facilities
- Shore protection structures
- Dredge & fill
- Wetlands drainage
- Roads & buildings

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Threats: Land-Based Pollution

- Point sources
- Non-point sources: urban & nonurban
- Upstream pollution
- Irrigation return flows

Marine Photobank - Ryan Binns

Marine Photobank

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Threats: Maritime Activity

- Dry-dock & harbor operations
- Ballasting & tank washing
- Oil spills
- Solid & sewage wastes (cruise ships)

Marine Photobank - Steve Ebert, USFWS

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EXERCISE: Following a drop of water

GIS-based exercise to track storm water pollution

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Sustainable Development

- Goal: Balance threats vs. uses

meets the needs of present generations without compromising the ability of future generations to meet their own needs

VS

"a process of development that allows for the improvement of the quality of human lives while maintaining and enhancing the resource base upon which life depends"

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Tracking New & Emerging Issues

The Role of Communication

- Start and maintain an Information database, or web-based cataloging system
- Create an evaluation system

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Tracking New & Emerging Issues

The Role of Research

- Inventory what you already have
- Observe & evaluate impacts
- Obtain new scientific knowledge
- Evaluate compliance
- Detect changes
- Link to broader issues outside MPA; contribute to greater regional & global understanding
- *Early warning of new & emerging problems*

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Types of Research, Part 1

- Inventories & baselines
  - what do you already have?
  - what are the conditions now? (water quality, etc.)
- Ecosystem monitoring (going forward)
- User monitoring (going forward)
  - can help assess *carrying capacity*

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Types of Research, Part 2

Most of the problems that MPA managers face are social & political.

- Economic research
- Sociological research
- Cultural research
- Political science research

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Planning & Budgeting for Research

- Need for advance planning
- Consistency over time
  - inconsistent research methods can be worse than no research at all
- Realistic budget
  - low budget research is valuable but must be planned well

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EXERCISE: Anticipating a Jellyfish Invasion

- Design a regional MPA network communication plan to build a partnership to address new and emerging issues, using a jellyfish invasion as an example/case study.

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Laws & Regulations

Protected Areas

Purposes for protection

IUCN protected area categories:

1. Wilderness Area
2. National Park
3. Natural Monument
4. Habitat/Species Management Area
5. Protected Landscape/Seascape
6. Managed Resource Protected Area

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MPA Laws & Regulations in Southeast Asia

Presentation by guest speaker on legal issues relevant to MPAs in SE Asia

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Wrap-Up

- What have we learned today?
- What will we do for the next 3 days?